Webinar:
Accelerating the Commercial Drones Market using Cellular Connectivity

Wednesday, 15 November 2017 | 3pm GMT
About the GSMA

The GSMA represents the interests of mobile operators worldwide, uniting nearly 800 mobile operators with 300+ companies in the broader mobile ecosystem.

The world’s leading mobile industry events, Mobile World Congress and Mobile World Congress Shanghai, together attract 130,000+ people from across the globe each year.

The GSMA works to deliver a regulatory environment that creates value for consumers by engaging regularly with:

- Ministries of Telecoms
- Telecoms Regulatory Authorities
- International & Non-Governmental Organisations

Connecting 27,000+ Industry Experts

Exclusively for GSMA Members, InfoCentre is your place to connect with a global community of industry experts.

GSMA Working Groups provide frameworks and standards in commercial, operational and technical matters that help maintain and advance mobile industry ecosystems.

7.5 Billion+ Mobile Connections Worldwide
Drones Interest Group Members

[Logos of various companies]
GSMA have created a policy position, on behalf of the mobile industry, to explain to policy makers and regulators the benefits of using mobile networks to provide ‘cellular connectivity’ to drones, which are:

- Support of unmanned traffic management solutions and no-fly zones
- Identification and registration schemes can be made possible for drones
- Tracking of drones can be enabled assisting law enforcement
- Mobile networks have a track record and useful tools to ensure privacy and data protection.

Mobile technology is a great enabler for the emerging drone market as:

- Infrastructure already exists & wireless services can be used for communications using commercially available licensed spectrum

The position is available at this link [https://www.gsma.com/iot/iot-knowledgebase/gsma-regulatory-position-drones/](https://www.gsma.com/iot/iot-knowledgebase/gsma-regulatory-position-drones/)
The GSMA created a paper that provides some insights on the current and future features of the mobile network for supporting unmanned aircraft, particularly for commercial application.

The paper is targeted at GSMA members to help them understand which aspects of the network are of particular interest for UA operations. The document provides information about:

- Identification of unmanned aircraft in the mobile networks.
- Network performances and optimisation options.
- 3GPP work in support of UA operations, current and future.
- Analysis of potential type of communications for command and control and payload

Document available to GSMA members [HERE](#).
Next Steps for GSMA’s Drones Project

- Report on how mobile networks add value to key use cases for drones, available by January 2018
  - It will also to explain results of the 3GPP study on drones

- Investigation of how mobile networks can support air traffic management

- Lobbying our policy position with regulators to encourage positive and globally aligned regulation on drones

- Several activities at Mobile World Congress 2018 on drones, including seminars, exhibitions and tours
Why to connect drones via mobile network?

Mobile connectivity: Immediate advantage

- Standardized solution for worldwide connectivity
- Identification with SIM-credentials
- Licensed spectrum in cellular mobile network
- Secure communication channel
Cellular offers three key elements to boost commercial drone market.

1. **Air Traffic Management (UTM)**
   - **Now**: Make drones visible on the radar
   - **Next**: Regulatory imperative

2. **BVLOS* Operations**
   - **Now**: Business need: Make them fly beyond visual line of sight
   - **Next**: Business need: Real-time transfer & analytics of pictures, videos and sensor data

3. **Real-time Data Transfer**
   - **Now**: Real-time transfer & analytics of pictures, videos and sensor data
   - **Next**: SD-Card, WiFi beyond line of sight
Make drones visible on the radar how cellular helps with Utm.

**PREREQUISITES**

- **HOD**-prototype
- **UTM** framework

**TRACKING TESTS**

- **ONE DRONE** -July-
- **SEVEN DRONES** -August-

**Flight-Mission**

**Tracking-Results**
Make drones fly BVLOS and transfer real time data.

1st bvlos test-flight over cellular.

FIREFIGHTER REMOTE Drone operation.

DLRG BVLOS Mission with REAL-TIME DATA TRANSFER.

Exemplary DT show cases
Key takeaways.

Cellular connectivity (*a Drone SIM*) is:
- globally available functions required by Aviation authorities (AAA)
- core enabler of UAV Traffic Management (UTM)
- key for efficient commercial drone operations (BVLOS).
Thank you!

Ralph Schepp
VP Project & Program Management
Deutsche Telekom AG
UAS as a Tool Across Verizon
Telecom Enables UAS

1. Emergency Response
2. Remote ID and Tracking
3. Access to Airspace
Emergency Response
Hurricane Irma – Damage Evaluation

- Marco Island, Florida
- Pembroke Pines Emergency Operations Center
- Tower On Wheels (TOW)
Hurricane Harvey — Damage Evaluation

- Fulton, Texas
- 10 towers in 1 day
- Speed and efficiency
- Level of detail
Airborne LTE Operations (ALO)

- Emergency response
- Flying cell site
- Verizon’s 4G LTE to enhance recovery efforts
- Cape May UAS demonstration
Venue Inspection

- Outside Austin, Texas
- Circuit of the Americas
- Traditionally, “walk-test”
- Service quality
Remote ID and Tracking
Harmonizing Means Integrating

1. Airspace regulations
2. Working with the regulators
3. Innovating technological solutions
Access to Airspace
Automated Access to Controlled Airspace with Skyward

- FAA-approved vendor
- 60-90 days > seconds to receive authorization to fly
- FAA’s beta program is active
- Full System expected to go online by February of 2018
Notice of Authorization

This certifies that

Airspace

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FAA Authorization Approved

This operation has received approval from the FAA. In order to change the operation date, time, Pilot-in-Command, or the flight location, you will need to modify your request.

Modify my Authorization
Accelerating the commercial drones market using cellular technology

Mark Jones
Global IoT Lead
Commercial Strategy & Market Development
Automated Access to Controlled Airspace with Skyward

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Commercial drones are the main target for cellular enablement. They are particularly useful in areas with high mobile network coverage, such as cities and towns. Consumer drones are primarily used for activities like aerial photography and postal delivery. Commercial drones are targeted for industries like industrial inspection, fire/police/ambulance services, and emergency repairs to remote & inaccessible machinery. Military drones are typically used for high-intensity operations. The diagram also highlights the importance of mobile network coverage in determining where drones can be effectively deployed. Application for Commercial drones, and where Mobile network coverage is best, i.e. in Cities and Towns.
What form of communication will drones require and why?

Cellular connectivity can underpin flight enablement, in flight safety and data/information gathering. Embedded SIMs commercial drones meets the needs of manufacturers, insurance and regulatory agencies.
Cellular use cases can be segmented into three service categories:

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<tr>
<th>Authorisation Services</th>
<th>In-flight Services</th>
<th>Data / Info Services</th>
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<tbody>
<tr>
<td>Drone Registration</td>
<td>Flight control</td>
<td>Media streaming (video)</td>
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<td>Pilot registration &amp; ID</td>
<td>Geo-locating</td>
<td>Cargo monitoring</td>
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<td>Drone configuration</td>
<td>Geo-fencing</td>
<td>Imagery analysis</td>
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<td>Flight planning</td>
<td>Flight deviation</td>
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<td>Flight configuration</td>
<td>Remote intervention</td>
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<td>Flight authorisation</td>
<td>On ground services</td>
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<td>Flight log</td>
<td>Over the air flight update</td>
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<td>Insurance</td>
<td>Remote data / maintenance / fault</td>
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<td>Airtime monitoring</td>
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<td></td>
<td>Beaconing</td>
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<td>Collision avoidance</td>
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We are using these use cases as the basis to engage with the external stakeholders in the Drones market.
Vodafone “Radio Positioning System” for drones

- Trial in Seville Spain – 20th October 2017 involving 32km low altitude flight of a x-uav drone
- Mobile network based system to monitor flights by drones - showing how commercial drones can be safely identified, geo-positioned and operated in future
- Demonstrated remote control & monitoring via purpose designed software based on UTM protocol
- Also provided real time HD video feed and telemetry information (wind speed, drone speed / altitude)
Collaboration is needed to accelerate market development

Regulation

Air space management
Security
Threat management

Technology enablement
Service development
(parcel delivery)

“SIM” in every drone

Enforcement

• Identification
• Tracking
• Location
• Ownership
• Compliance
• Intervention

Operations

• Licensing
• Flight planning
• Insurance
• Reporting

• Data/video transmission
• Unmanned/BLOS operation

Governments want to encourage drone operations but are fearful of the risks—cellular technology enhances the features of the drone (video) but also supports and optimises the certification and enforcement process
Thank You
To find out more about the work on drones at the GSMA, and to subscribe to our IoT newsletter, visit:

www.gsma.com/drones